U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Ipomopsis polyantha*

COMMON NAME: Pagosa skyrocket

LEAD REGION: Region 6

INFORMATION CURRENT AS OF: October 2005

STATUS/ACTION
___ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status
___ New candidate
_X_ Continuing candidate
_X_ Non-petitioned
___ Petitioned - Date petition received:
__ 90-day positive - FR date:
__ 12-month warranted but precluded - FR date:
__ Did the petition request a reclassification of a listed species?
FOR PETITIONED CANDIDATE SPECIES:
a. Is listing warranted (if yes, see summary of threats below)?
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions?
c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.
___ Listing priority change
Former LP: ___
New LP: ___
Date when the species first became a Candidate (as currently defined): 2005
___ Candidate removal: Former LP: ___
___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
____U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
___ F – Range is no longer a U.S. territory.
___ I – Insufficient information exists on biological vulnerability and threats to support listing.
___ M – Taxon mistakenly included in past notice of review.
___ N – Taxon does not meet the Act's definition of "species."
___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering Plant, Polemoniaceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Colorado

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Archuleta County, Colorado

LAND OWNERSHIP: Approximately 55 percent of occupied habitat is on Colorado Department of Transportation highway rights-of-way, 44 percent is on private lands, 1 percent is on Town of Pagosa park land.

LEAD REGION CONTACT: Pat Mehlhop, (303) 236-4215

LEAD FIELD OFFICE CONTACT: Ellen Mayo, (970) 243-2778, extension 14

BIOLOGICAL INFORMATION:

Species Description

Ipomopsis polyantha is an "Herbaceous perennial or possibly biennial (monocarpic) up to 30 to 60 cm (12 to 24 inches) tall, branched from near the base, with grayish deeply divided leaves with linear leaflets scattered up the stem. The inflorescences occur along the stem in the axils of the leaves as well as at the top of the stem. The white tubular flowers may be flecked with purple dots and have short tubes with flaring lobes" (J. Anderson 1988). These dots are occasionally so dense as to give the flower a pinkish or purplish hue. The corolla is 10 millimeters long with a short throat (4.5-6.5 mm) and flaring lobes. The stamens are noticeably exserted (D.G. Anderson 2004).

Taxonomy

I. polyantha was originally described by Rydberg (1904) as *Gilia polyantha.* Grant (1956) moved the species into the genus *Ipomopsis.* Two other taxa have been included within *I. polyantha* as synonyms or varieties: *Gilia polyantha* var. *brachysiphon* and *G. polyantha* var. *whitingii* (Kearney and Peebles 1943). Recent taxonomic research suggests that neither *brachysiphon* nor *whitingii* should be treated as infraspecific taxa under *I. polyantha* (D.G. Anderson 2004). Porter et al. (2003) included *whitingii* but not *brachysiphon* in their phylogenetic analysis of *Ipomopsis,* and it does not appear to be closely related to *I. polyantha.* Thus the most up-to-date sources available indicate that *I. polyantha* is a distinct species. It is treated as such in Kartesz (1999) and in the PLANTS database (U.S. Department of Agriculture, National Resources Conservation Service 2003).

Habitat

I. polyantha is limited specifically to Pagosa-Winifred soils derived from Mancos Shale. The pH is nearly neutral to slightly alkaline (6.6-8.4). The elevation range is 6,800-7,300 feet. It occurs in discontinuous colonies as a pioneer on open shale or as a climax species along the edge of ponderosa pine/juniper/oak forested areas. In 1988 J. Anderson reported finding the highest densities under ponderosa pine forests with montane grassland understory. Now it is found mostly on sites that are infrequently disturbed, such as road rights-of-way that are fenced from

grazing (as opposed to open range), seldom grazed pastures, and vacant lots (D.G. Anderson 2004).

Historical and Current Range/Distribution

Between its discovery in 1899 and its designation as a category 2 candidate in 1985, *I. polyantha* was only found in the vicinity of Pagosa Springs. In 1985 and 2002 two additional populations were found. All known populations are within 13 miles of each other and collectively occupy approximately 571.5 acres. There have been many surveys of potential habitat over the years, but there also is potential habitat that remains unsurveyed for lack of access to private lands. Reports of this species occurring in Arizona and New Mexico by the PLANTS National Database and State floras actually pertain to entities that were formerly treated as infraspecific taxa under *I. polyantha* (D.G. Anderson 2004).

Population Estimates/Status

Population estimates for the three known locations are:

1) 126 plants on highway right-of-way.
2) 120-500+ plants on private and highway right-of-way--this population could not be relocated in 2003. In 2005 this population was relocated and 46 flowering individuals were found to extend onto land managed by the Bureau of Land Management (BLM).
3) 2,000-10,000+ plants on private lands, highway right-of-way and Town park land--the total estimate was 2,246-10,626+ plants as of 2004 (D.G. Anderson 2004). Surveys in 2005 found much higher densities of plants. All were within the known range of the species. Other *Ipomopsis* species in the area were also unusually abundant this year.

THREATS

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.

Residential and commercial development presents the primary threat to the habitat for this species. The entire range of *I. polyantha* is planned for development in the Archuleta County Community Plan (D.G. Anderson 2004). In this plan all areas occupied by *I. polyantha* on private land are planned for low (35+ acres) medium (3-35 acres) or high (2-5 acres) density. This is 44 percent of the occupied habitat. Many residents are expected to graze horses on their parcels. In one subdivision, many scattered plants are visible from the road. Residential development is increasing rapidly in the county. In 1997 the population of Pagosa Springs was 1,767; the projection for 2020 is over 9,000.

A “big box” retail outlet center has been proposed on occupied habitat at the center of distribution for *I. polyantha.* A ski resort village with 2,200 residential units is proposed for development at the nearby Wolf Creek ski area. The village would not impact potential habitat for the plant, but it would increase pressure for wider roads and more retail outlets around Pagosa Springs.

Right-of way management is a significant threat. Most populations not on private land are on highway rights-of-way (55 percent). Road right-of-way habitat is vulnerable to highway widening, weed management practices and utility construction or maintenance (D.G. Anderson 2004).

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.
Wildflower gathering may occur along highway rights-of-way, but there are no reports of overutilization.

C. Disease or Predation.
All observations suggest that *I. polyantha*does not tolerate livestock grazing (D.G. Anderson 2004). Although it is excluded from grazed pastures, large occurrences have been observed in abandoned pastures (Collins 1995). Studies are needed to determine the relationship between grazing and population density.

D. The Inadequacy of Existing Regulatory Mechanisms.
There are currently no enforceable laws or regulations that confer any protection to this species.

E. Other Natural or Manmade Factors Affecting Its Continued Existence.
Narrow tolerance of edaphic conditions limits the species to a 13-mile range on outcrops of Upper Cretaceous Mancos Shale.

The results of seed germination experiments suggest that the species has specific physiological requirements for germination and growth that might prevent its spread to other locations. *I. polyantha* is a facultative outcrosser; fragmentation of habitat may cause gene flow to be obstructed. Signs of inbreeding depression have been observed in small populations of similar species. Pollinator-mediated pollen dispersal is largely limited to the flight distances of pollinators. Thus, it is likely that the population of 120-500+ plants is genetically isolated from the other 2 populations several miles away. Roadside habitat for *I. polyantha* also has been shown to provide 44 percent less diversity in pollinator species than unused pasture habitat where a wider range of nectar and pollen resources are available along with water (Collins 1995).

As a biennial species, *I. polyantha* is vulnerable to environmental stochasticity, e.g., during drought years plants may remain as rosettes without flowering. It has a high rate of population turnover and high annual variability in reproductive effort.

I. polyantha is similar to its closest relative *Ipomopsis sancti-spiritus*, a listed endangered species, which also grows primarily on road cuts (U.S. Fish and Wildlife Service [USFWS] 2002). Both species may have adapted to anthropogenic disturbance when their natural disturbance regime was altered.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

The USFWS made *Ipomopsis polyantha* a category 2 candidate species in 1985. The species remained a category 2 candidate until 1996. Since 1996 threats to the species have escalated along with development of its habitat. The USFWS added this species to the list of candidates again in 2005.

A Technical Conservation Assessment of the species has been prepared by David G. Anderson of the Colorado Natural Heritage Program (CNHP) for the U.S. Department of Agriculture, Forest Service (USFS), Rocky Mountain Region. This assessment cites an exhaustive list of 156 references pertinent to the species and its conservation status (D.G. Anderson 2004).

Potential Conservation Areas have been proposed by the CNHP to the San Juan National Forest and Archuleta County to facilitate awareness of this species and its habitat during planning and management activities (D.G. Anderson 2004).

Ipomopsis polyantha is on the sensitive species list for the USFS, Region 2 and the BLM State sensitive species list, but it's occurrence on Federal lands is limited. In 2005, one of the three populations was found to extend onto BLM land. The BLM parcel is being transferred to private ownership with a conservation easement to protect the plants.

The Colorado Department of Transportation (CDOT) has agreed to apply a protocol for avoidance and mitigation of impacts to plants during construction and maintenance projects on highway rights-of-way. A draft protocol is currently being applied to a sewer line installation in consultation with the USFWS. Unavoidable plant rosettes (next year's adults) have been transplanted from the project area.

A Pagosa skyrocket working group has been organized to coordinate ongoing protection activities. The group includes individuals from USFWS, CNHP, Colorado Natural Areas Program, USFS, BLM, CDOT, The Nature Conservancy, Southern Ute Tribe, La Plata Electric, Colorado Native Plant Society, Pagosa Parks and Recreation, Archuleta County, and environmental consultants.

All known populations and suitable habitat on public land and accessible private land were inventoried in 2005.

SUMMARY OF THREATS

- Residential and commercial development – potential destruction of about 44 percent of habitat.
- Habitat destruction and disturbance on highway rights-of-way – 55 percent.
- Grazing and trampling by domestic animals and wildlife on private land and highway rights-of-way – 25 percent.
- Regulatory protection is provided on about 1 percent of the habitat. Protocols to minimize impacts apply to about 55 percent of the habitat.
- Extreme edaphic specificity limits distribution; and reduced pollinator availability affects about 55 percent of the population.

LISTING PRIORITY

THREAT			
MAGNITUDE	IMMEDIACY	TAXONOMY	PRIORITY
High	**Imminent**	Monotypic genus	1
		Species	**2***
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

RATIONALE FOR LISTING PRIORITY NUMBER

MAGNITUDE: High
The species is threatened throughout its narrow range at all but 1 percent of the habitat. The effects will be permanent for plants impacted by development on private lands. The effects on highway right-of-way habitat (55 percent of the total) could be high to low depending on the actions of construction and maintenance personnel.

IMMINENCE: Imminent
Habitat destruction for development is currently taking place and will continue according to county plans for development. Power line construction through occupied habitat on highway rights-of-way and private land is planned for about 17 percent of the population in 2006. Sewer line was installed in about 5 percent of the occupied habitat in 2005. A newly discovered population on BLM land is being transferred to private ownership.

RATIONALE FOR CHANGE IN LISTING PRIORITY NUMBER

YES Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted?

No. The species is threatened throughout its range, but the development and construction activity will take portions of the habitat as it proceeds. The procedure for reporting, consulting, avoiding and mitigating impacts to the habitat is now in place. The species is not likely to be extirpated within the next year.

DESCRIPTION OF MONITORING

David Anderson's technical assessment (2004) provides the baseline data for review of this species. In September 2004 the Colorado Rare Plant Technical Committee held a symposium for review of the listed and candidate species in the state. Reviewers agreed that *I. polyantha* was the top priority species in need of protection. In 2005 the CNHP conducted surveys of all known populations and accessible suitable habitat with the help of USFWS, USFS, and CDOT biologists as well as private consultants and volunteers. Individual plants and rosettes were counted on highway rights-of-way and locations were documented with GPS readings. Dense populations and those on the private side of the fence were estimated. The 2005 information is being entered into the Biotics 4 data system at CNHP.

COORDINATION WITH STATES

No Colorado agency has authority for plants. The USFWS met with the CNAP 3 times, the CNHP 21 times, the CDOT 8 times and the Colorado Division of Wildlife's State Wildlife Areas staff 3 times regarding the status and threats to the species and conservation measures planned and implemented.

LITERATURE CITED

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U.S. Fish and Wildlife Service. 2002. Holy Ghost Ipomopsis (*Ipomopsis sancti-spiritus*) Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions, or removal of species from candidate status, and listing priority changes.

Approve: /s/ Sharon Rose 11/4/2005
Acting Regional Director, Fish and Wildlife Service Date

Concur: _____ _____
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Date of annual review: 10/17/2005

Conducted by: Ellen Mayo